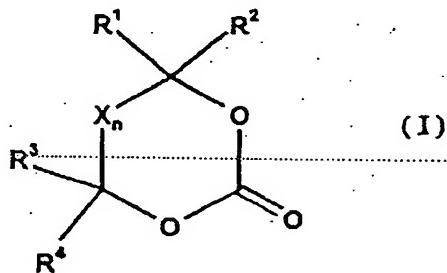


Claims:

1. A process for the hydroformylation of olefinically unsaturated compounds having from 3 to 24 carbon atoms in the presence of at least one metal of groups 8 to 10 of the Periodic Table of the Elements as catalyst, wherein the hydroformylation is carried out in the presence of at least 0.1 mol%, based on the olefinically unsaturated compound, of at least one cyclic carbonic ester of the formula I



where

15	R^1, R^2, R^3, R^4	are identical or different and are each H or a substituted or unsubstituted aliphatic, alicyclic, aromatic, aliphatic-alicyclic, aliphatic-aromatic or alicyclic-aromatic hydrocarbon radical having from 1 to 27 carbon atoms,
20		
25	n	is 0 - 5
	x	is a divalent substituted or unsubstituted, aliphatic, alicyclic, aromatic, aliphatic-alicyclic or aliphatic-aromatic hydrocarbon radical having from 1 to 27 carbon atoms,
30		

and at least one ligand which contains no sulfonic acid group or sulfonate group.

2. The process as claimed in claim 1, wherein R¹, R², R³, R⁴ and X are substituted by identical or different substituents selected from among O, N, NH, N-alkyl and N-dialkyl radicals, fluorine, chlorine, bromine, iodine, -OH, -OR, -CN, -C(O)alkyl or -C(O)O-alkyl.
5. The process as claimed in claim 1 or 2, wherein the hydroformylation is carried out in the presence of at least 0.1 mol%, based on the olefinically unsaturated compound, of at least one solvent which is relatively nonpolar compared to the cyclic carbonic ester I and is immiscible with the cyclic carbonic ester I.
10. The process as claimed in claim 3, wherein substituted or unsubstituted hydrocarbons having from 5 to 50 carbon atoms, olefinically unsaturated compounds or olefins having from 3 to 24 carbon atoms are used as nonpolar solvent.
15. The process as claimed in any of claims 1 to 4, wherein the output from the hydroformylation reaction is separated into a fraction comprising predominantly the catalyst and the cyclic carbonic ester and a fraction comprising predominantly the hydroformylation products.
20. The process as claimed in any of claims 1 to 4, wherein the output from the hydroformylation reaction is separated into a fraction comprising predominantly the catalyst and a nonpolar solvent and a fraction comprising predominantly the hydroformylation products and the cyclic carbonic ester.
25. The process as claimed in any of claims 1 to 4, wherein the output from the hydroformylation
30. The process as claimed in any of claims 1 to 4, wherein the output from the hydroformylation
35. The process as claimed in any of claims 1 to 4, wherein the output from the hydroformylation

- reaction is separated into a fraction comprising predominantly the catalyst and unreacted olefinically unsaturated compounds and a fraction comprising predominantly the hydroformylation products and the cyclic carbonic ester.
- 5 8. The process as claimed in any of claims 1 to 7, wherein the fraction comprising the catalyst is recirculated to the hydroformylation reaction.
- 10 9. The process as claimed in any of claims 1 to 8, wherein the cyclic carbonic ester used is ethylene carbonate, propylene carbonate or butylene carbonate or a mixture thereof.
- 15 10. The process as claimed in any of claims 1 to 9, wherein the hydroformylation is carried out in the presence of phosphonites, phosphites, phosphine oxides, phosphines, phosphinites, phosphinines and/or phosphinanes.
- 20 11. The process as claimed in any of claims 1 to 10, wherein the unreacted olefinically unsaturated compounds (olefins) are separated off from the reactor output or from the hydroformylation products and are recirculated to the hydroformylation reaction.
- 25 12. The process as claimed in any of claims 1 to 10, wherein the unreacted olefinically unsaturated compounds are separated off from the reactor output or from the hydroformylation products and are used in a second reaction stage.